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AGRICULTURAL MEMORANDUM NO 758

CHANGE OF WEATHER FACTORS WITH HEIGHT

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The change with height factors given in the Appendix are those which have been included in the forthcoming MAFF Agroclimate Bulletin, and are put together here for immediate easy reference.

Any comments of suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

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APPENDIX

Decrease with height factors

	Mean Air Temperature °C per 100m			30cm Earth Temperature °C per 100m			Potential Transpiration mm per 100m
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Jan	0.6	0.65	0.45	0.4	0.25	0.3	1.5
Feb	0.65	0.65	0.55	0.45	0.3	0.35	2.0
Mar	0.75	0.55	0.6	0.55	0.45	0.5	3.0
Apr	0.75	0.6	0.65	0.75	0.65	0.7	3.5
May	0.65	0.6	0.7	0.8	0.75	0.8	3.5
June	0.65	0.55	0.8	0.85	0.85	0.85	3.0
July	0.65	0.65	0.75	0.8	0.85	0.85	3.0
Aug	0.6	0.7	0.75	0.75	0.8	0.8	2.5
Sept	0.6	0.7	0.55	0.75	0.7	0.7	2.0
Oct	0.6	0.65	0.45	0.7	0.5	0.6	1.5
Nov	0.6	0.65	0.45	0.6	0.45	0.5	1.0
Dec	0.6	0.65	0.4	0.45	0.35	0.4	1.0
Year	0.64	0.63	0.61	0.66	0.58	0.61	27.5*

(a) Northern Pennines; western slopes
(b) Central Wales ; western slopes
(c) Central Wales ; eastern slopes
(d) Northern Pennines
(e) North Wales
(f) Smoothed Mean
(g) England and Wales * Yearly total

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	Sunshine hours per day per 100m (h)	Radiation Milli-watt hours per sq cm per 100m (i)	(j)	Illumination Kilolux-hours per 100m (k)	(l)	Wind **Knots per 100m (m)
Jan	0.11	2.1	1.7	2.3	1.7	1.5
Feb	0.13	3.9	3.0	4.0	3.4	1.4
Mar	0.17	6.4	5.2	6.9	6.0	1.3
Apr	0.23	8.3	7.0	9.5	8.5	1.2
May	0.22	8.4	7.7	10.3	9.5	1.1
Jun	0.23	8.2	7.4	9.9	9.1	1.0
Jul	0.21	8.0	6.9	9.5	8.6	1.0
Aug	0.22	7.4	6.6	9.0	8.1	1.1
Sept	0.18	5.8	5.5	7.3	6.7	1.3
Oct	0.16	3.8	3.5	4.6	4.1	1.5
Nov	0.13	2.1	2.0	2.4	2.0	1.8
Dec	0.09	1.5	1.4	1.6	1.3	1.6
Year	0.17	5.5	4.8	6.4	5.7	1.3

(h) England and Wales
(i)(k) North England and North Wales
(j)(l) South England, Central and South Wales
(m) England & Wales ** Increase with height

Change with height factors

	NW	NE	W Mids	E Mids	E	SE	S	SW	Wales
Growing Season decrease (days per 100m)	15-20	15-20	15-20	15-20	15-20	20-25	20-25	30-35	20
Grazing Season decrease (days per 100m)	33-40	45-50	45-50	45-50	40-45	40-45	45-50	65-75	33-40
P.T in Growing Season decrease (mm per 100m)	45-50	35-40	25-30	20-25	20-25	20-25	25-35	45-50	40-45
Return to Capacity* (days earlier per 100m)	25-30	25-30	35-40	35-40	35-40	35-40	35-40	40-45	35-40
Excess Winter Rain (increase mm per 10m)	22	14	14	14	14	14	20	28	22
End of Capacity* (days delay per 10m)	10	15	15	15	15	15	20	25	10
Maximum actual* Summer SMD (decrease mm per 100m)	20-25	20-25	20-25	20-25	20-25	25-30	25-30	30-35	20-25
Day degrees above 10°C (decrease per 100m)	75-85	75-85	100-110	100-110	100-110	100-110	100-110	110-115	75-85
Day degrees below 0°C (increase per 100m)	40-45	40-45	25-30	25-30	25-30	40-47	37-43	45-40	40-45

* A better adjustment is obtained by using rainfall data.